



sequence listing US1 Amended GL 17OCT04.txt
SEQUENCE LISTING

<110> Genotherapeutics Inc.

Steiner, Mitchell

Rinaldi, Augustine

Menon, Rema

<120> An isolated nucleic acid encoding P-HYDE
protein and methods of inducing susceptibility to
induction of cell death in cancer

<130> P-2762-US1

<140> US 09/449,817

<141> 1999-11-26

<150> US 09/302,457

<151> 1999-04-29

<160> 7

<170> PatentIn version 3.0

Page 1

sequence listing US1 Amended GL 17OCT04.txt

<210> 1

<211> 733

<212> DNA

<213> human

<400> 1

tacgacttgg tcaacctggc agtcaagcag gtcttggcca acaagagcca
cctctgggtg 60

gaggaggagg tctggcggat ggagatctac ctctccctgg gagtgtgtgc
cctcggcacg 120

ttgtccctgc tggccgtgac ctcaactgccg tccattgcaa actcgetcaa
ctggaggagg 180

ttcagcttcg ttcagtcctc actgggcttt gtggccctcg tgctgagcac
actgcacacg 240

ctcacctaag gctggaccgg cgccttcgaa gagaccgcta caagttctac
ctgcctccca 300

ccttcacgct cacgctgctg gtgccctgcg tcgtatcctt ggccaaagcc
ctgtttctcc 360

tgccctgcat cagccgcaga ctccccagga tccggagaag ctgggagagg
gagagacca 420

tcaagtccac gctgccaca gaccacgcc tggccgagaa gacgagccac
gtatgagggtg 480

cctgccctgg gctctggacc ccgggcacac gagggacggt gccctgagcc
cgtaggttt 540

sequence listing US1 Amended GL 17OCT04.txt
tctttttcttg gtggtgcaaa gtggtataac tgtgtgcaaa taggagggtt
gaggtccaaa 600
ttcctgggac tcaaattgtat gcatgactat tcagaatgat atacacacat
atgtgtatat 660
gtattttacat atattccaca tatataacag gatttgcaat tatacatagc
tagctaaaaa 720
aaaaaaaaaa aaa
733

<210> 2
<211> 186
<212> PRT
<213> Human

<400> 2
Met Glu Ile Tyr Leu Ser Leu Gly Val Leu Ala Leu Gly
Thr Leu Ser 5 10
15
Leu Leu Ala Val Thr Ser Leu Pro Ser Ile Ala Asn Ser
Leu Asn Trp 20 25 30
Arg Glu Phe Ser Phe Val Gln Ser Ser Leu Gly Phe Val
Ala Leu Val 35 40 45
Leu Ser Thr Leu His Thr Leu Thr Tyr Gly Trp Thr Arg
Page 3

Ala Phe Glu
50

55

60

Glu Thr Ala Thr Ser Ser Thr Cys Leu Pro Pro Ser Arg
Ser Arg Cys
65 70 75
80

Trp Cys Pro Ala Ser Ser Ser Trp Pro Lys Pro Cys Phe
Ser Cys Pro 85 90
95

Ala Ser Ala Ala Asp Ser Pro Gly Ser Gly Glu Ala Gly
Arg Gly Arg 100 105
110

Ala Pro Ser Ser Ser Arg Cys Pro Gln Thr Thr Pro Trp
Pro Arg Arg 115 120 125

Arg Ala Thr Tyr Glu Val Pro Ala Leu Gly Ser Gly Pro
Arg Ala His
130 135 140

Glu Gly Arg Cys Pro Glu Pro Val Arg Phe Ser Phe Leu
Gly Gly Ala
145 150 155
160

Lys Trp Tyr Asn Cys Val Gln Ile Gly Gly Leu Arg Ser
Lys Phe Leu
175 165 170

Gly Leu Lys Cys Met His Asp Tyr Ser Glu
180 185

sequence listing US1 Amended GL 17OCT04.txt

<210> 3

<211> 1467

<212> DNA

<213> Rat

<400> 3

atgtccgggg agatggacaa accgctcatc agtcgccgct tggaggacag
tgatggcagt 60

ctggctgagg tccccaagga ggctcccaa gtgggcatcc tgggcagcgg
ggattttgcc 120

cggtcccttg ccacacgcct ggtgggctct ggcttctttg tgggtgtggg
aagccgtaac 180

cccaaacgca ctgccggcct cttcccttcc ttagcccaag tgactttcca
ggaggaggcc 240

gtgagctctc cagagggtcat ctttgtggcc gtgttccggg agcactactc
ctcactgtgc 300

agtcttgctg accagttggc tggcaagatc ctagtggatg taagcaaccc
cacggagaag 360

gagcgtcttc agcaccgcca gtcgaacgcc gagtacctgg cctccctctt
ccctgcctgc 420

actgtgggtca aggccttcaa cgtcatctct gcatgggccc tacaggctgg
cccaagggat 480

gggaacaggc aggtgctcat ctgcggtgac cagctggaag ccaagcacac
cgtctcagag 540

atggcgcgcg ccatgggttt caccacctg gacatgggat ccctggcctc
agcgaggagg 600

sequence listing US1 Amended GL 17OCT04.txt

gtagaggcca tacccctgcg cctccttcca tcctggaagg tgcccaccct
cctggccctg 660

gggctaagca cacaaagcta tgcctacaac ttcattccggg acgttctaca
gccgtacatc 720

cggaagatg agaacaagtt ctacaagatg cccctgtctg tggtaaacac
cacgataccc 780

tgtgtggctt acgtgctgct gtccctgggt tacctgcctg gtgtgctggc
agctgccctt 840

cagctgagga gggggaccaa gtaccagcgc ttcccagact ggctggacca
ttggctgcag 900

caccgcaagc agatcgggct actcagcttt tttttcgcca tgctgcacgc
tctctacagc 960

ttctgcctgc cgctgcgccg ctcccaccgc tatgatctgg tcaacctggc
tgtgaagcag 1020

gtcctggcca acaagagccg cctctgggtt gaggaagaag tctggcggat
ggagatatac 1080

ctgtccctgg gtgtgctggc tctgggcatg ctgtcactgc tggcggttac
ctcgatccct 1140

tccattgcaa actcactcaa ctggaaggag ttcagctttg tgcagtccac
gctgggcttc 1200

gtggccctga tgctgagcac aatgcacacc ctacactacg gctggacccg
tgcttttgag 1260

gaaaaccact acaagttcta cctgccaccc acattcacgc tcacgtgct
cctgccctgt 1320

gtcatcatcc tggccaaggg cctcttcctc ctgccctgcc tcagccacag
actcaccaag 1380

atccgcaggg gctgggagag ggatggtgcc gtcaagttca tgctgcccgc

sequence listing US1 Amended GL 17OCT04.txt
tggccacaca 1440

cagggggaga aaacaagcca cgtgtga
1467

<210> 4

<211> 17

<212> PRT

<213> Rat

<400> 4

Asn Phe Ile Arg Asp Val Leu Gln Pro Tyr Ile Arg Lys
Asp Glu Asn
1 5 10
15

Lys

<210> 5

<211> 3884

<212> DNA

<213> Rat

<400> 5

gcggccgcca tcatcaataa tataccttat tttggattga agccaatatg
ataatgaggg 60

ggtggagttt gtgacgtggc gcggggcgtg ggaacggggc gggtgacgta

sequence listing US1 Amended GL 17OCT04.txt

```

gtagtgtggc      120
ggaagtgtga tgttgcaagt gtggcggaac acatgtaagc gacggatgtg
gcaaaaagtga      180
cgtttttgggt gtgcgccggt gtacacagga agtgacaatt ttcgcgcggt
tttaggcgga      240
tgttgtagta aatttgggcg taaccgagta agatttgccc attttcgcgg
gaaaactgaa      300
taagaggaag tgaaatctga ataattttgt gttactcata gcgcgtaata
ttgtctagg      360
gccgcgggga ctttgaccgt ttacgtggag actcgcccag ggcgcgcccc
gatgtacggg      420
ccagatatac gcgtatctga ggggactagg gtgtgtttag gcgaaaagcg
gggcttcggt      480
tgtacgcggt taggagtccc ctcaggatat agtagtttcg cttttgcata
gggaggggga      540
aatgtagtct tatgcaatac tctttagtgc ttgcaacatg gtaacgatga
gtagcaaca      600
tgccttaciaa ggagagaaaa agcaccgtgc atgccgattg gtggaagtaa
ggtggtacga      660
tcgtgcctta ttaggaaggc aacagacggg tctgacatgg attggacgaa
ccactgaatt      720
ccgcattgca gagatattgt atttaagtgc ctagctcgat acaataaacg
ccatttgacc      780
attcaccaca ttggtgtgca cctccggccc tggccactct cttccgcac
gctgtctgcg      840
ggggccagct gttgggctcg cggttgagga caaactcttc gcggtctttc
cagtactctt      900

```


sequence listing US1 Amended GL 17OCT04.txt

```

ggatcgga aa cccgtcggcc tccgaacggt actccgccgc cgagggacct
gagcgagtcc 960

gcatcgaccg gatcgga aa cctctcgaga aaggcgtgta accagtcaca
gtcgtcttag 1020

aactagtggg tccccggggc tgcaggaatt cgataattcg gcacgaggct
gccgaggcac 1080

tgtgatgtcc ggggagatgg acaaaccgct catcagtcgc cgcttggtgg
acagtgatgg 1140

cagtctggct gaggtcccca aggaggctcc caaagtgggc atcctgggca
gcggggattt 1200

tgcccggtcc ctggccacac gcctgggtggg ctctggcttc tttgtgggtg
tggaagccg 1260

taaccccaaa cgcactgccg gcctcttccc ctcttagcc caagtgactt
tccaggagga 1320

ggccgtgagc tctccagagg tcattcttgt ggccgtgttc cgggagcact
actcctcact 1380

gtgcagtctt gctgaccagt tggctggcaa gatcctagtg gatgtaagca
acccacgga 1440

gaaggagcgt cttcagcacc gccagtcgaa cgccgagtac ctggcctccc
tcttccctgc 1500

ctgcactgtg gtcaaggcct tcaacgtcat ctctgcatgg gccctacagg
ctggcccaag 1560

ggatgggaac aggcaggtgc tcattctcgg tgaccagctg gaagccaagc
acaccgtctc 1620

agagatggcg cgcgccatgg gtttcacccc actggacatg ggatccctgg
cctcagcgag 1680

ggaggtagag gccatacccc tgcgcctcct tccatcctgg aagggtccca
ccctcctggc 1740

```

sequence listing US1 Amended GL 17OCT04.txt

cctggggcta agcacacaaa gctatgccta caacttcata cgggacgttc
tacagccgta 1800

catccggaaa gatgagaaca agttctacaa gatgcccttg tctgtggtca
acaccacgat 1860

accctgtgtg gcttacgtgc tgctgtccct ggtttacctg cctgggtgtgc
tggcagctgc 1920

ccttcagctg aggaggggga ccaagtacca gcgcttccca gactggctgg
accattggct 1980

gcagcaccgc aagcagatcg ggctactcag cttttttttc gccatgctgc
acgctctcta 2040

cagcttctgc ctgccgctgc gccgctccca ccgctatgat ctggtcaacc
tggctgtgaa 2100

gcaggtcctg gccacaaga gccgcctctg ggttgaggaa gaagtctggc
ggatggagat 2160

atacctgtcc ctgggtgtgc tggctctggg catgctgtca ctgctggcgg
ttacctgat 2220

cccttcatt gcaaactcac tcaactggaa ggagttcagc tttgtgcagt
ccacgctggg 2280

cttcgtggcc ctgatgctga gcacaatgca caccctcacc tacggctgga
cccgtgcttt 2340

tgaggaaaac cactacaagt tctacctgcc acccacattc acgctcacgc
tgctcctgcc 2400

ctgtgtcatc atcctggcca agggcctctt cctcctgccc tgcctcagcc
acagactcac 2460

caagatccgc aggggctggg agagggatgg tgccgtcaag ttcatgctgc
ccgctggcca 2520

cacacagggg gagaaaacaa gccacgtgtg aggccctgga aatggagaca

sequence listing US1 Amended GL 17OCT04.txt

ggcacagctt 2580

gtggggggccc tgggctgggt tcgggtctct tttctgggat ggtatatgcg
tgggtggccg 2640

aggtctgaat ttctgggatg caggtgtatg ccgagatact cagaatggcg
taccacacat 2700

gcgataagta ctcacatata tttcatatat aataggattt actattattc
ttagttaaaa 2760

aaaaatagtg ggtccttata tttcaactta tgcaggggtcc ctatatttca
acttgagcat 2820

ttcagagcaa atgccacaca ttaaacagca gatccccacc ttgtggtagc
tgagagagaca 2880

gacagaaact tctggttatg agagagactg tattttgttg gattctacct
ttaatccccg 2940

ttctctacgt tcccctgtta gccacatctt aacgttggtg cagagctggg
acaagagctg 3000

gctctggtgc agcctcccc atcccagggc taggaaacaa gcctctgatg
aacagaggga 3060

ccaggtcttg accctcctgc tcccgttcc ctgggctcga gtggggaggc
tcagcgggat 3120

ccccgcaat ctgtgcagga gttttcacag gtctgtcctt tcttccggga
gcggtctgaa 3180

gcggcccat ctgatcctag ctgagccgag attgttcccc actccctgaa
agtccagagt 3240

caccgtggag cctgcaaatt gctecttctg cgaagggtg aagtcaccgt
ctcaccagag 3300

ccattaacga acctgatctt cagaagaagc ataattgttt cccctccatt
aagttggtg 3360

sequence listing US1 Amended GL 17OCT04.txt

tgaccctctt taaaccactg tgccttctcg cctttcccat cactaatttg
ggcatctcca 3420

tggagtggac tcttgtcggg gcagttcagg ggggagggaa gcattagaga
ttgcggagaa 3480

taaccatcga agcctccctt ggatgttccc aggcgtgcct tcattaaatt
ggtccctaatt 3540

gagaatgaca ggggacccct gttgcctgta tgcagagaac cagccttctg
agcaccagg 3600

aaacacagtg gccccacgcc cttcaggggg gtcccacgtc ccctttccca
tgcttttgcc 3660

tccttcctc cgggttaca tcaaccataa aagtctgcaa atattgtttt
ttgaattatc 3720

aagcttatcg ataccgtcga aacttgttta ttgcagctta taatggttac
aaataaagca 3780

atagcatcac aaatttcaca aataaagcat ttttttcaat gcattctagt
tgtggtttgt 3840

ccaaactcat caatgtatct tatcatgtct ggatccgacc tcgg
3884

<210> 6

<211> 32166

<212> DNA

<213> Rat

<400> 6

atctggaagg tgctgaggtg cgatgagacc cgcaccaggt gcagaccctg
cgagtgtggc 60

sequence listing US1 Amended GL 17OCT04.txt

```

ggtaaacata ttaggaacca gcctgtgatg ctggatgtga ccgaggagct
gaggcccgat      120

cacttggtgc tggcctgcac ccgcgctgag tttggctcta gcgatgaaga
tacagattga      180

ggtactgaaa tgtgtgggcg tggcttaagg gtgggaaaga atatataagg
tgggggtctt      240

atgtagtttt gtatctgttt tgcagcagcc gccgccgcca tgagcaccaa
ctcgtttgat      300

ggaagcattg tgagctcata ttgacaacg cgcattgcccc catgggcccgg
ggtgcgtcag      360

aatgtgatgg gctccagcat tgatggtcgc cccgtcctgc ccgcaaactc
tactaccttg      420

acctacgaga ccgtgtcttg aacgccgttg gagactgcag cctccgccgc
cgcttcagcc      480

gctgcagcca ccgcccgcgg gattgtgact gactttgctt tcctgagccc
gcttgcaagc      540

agtgcagctt cccgttcata cgcccgcgat gacaagttga cggctctttt
ggcacaattg      600

gattctttga cccgggaact taatgtcgtt tctcagcagc tgttgatct
gcgccagcag      660

gtttctgccc tgaaggcttc ctccccctcc aatgcggttt aaaacataaa
taaaaaacca      720

gactctgttt ggatttgat caagcaagtg tcttgctgtc tttatttagg
ggttttgcgc      780

gcgcggtagg cccgggacca gcggtctcgg tcgttgaggg tcctgtgtat
ttttccagg      840

acgtggtaaa ggtgactctg gatgttcaga tacatgggca taagcccgtc

```

sequence listing US1 Amended GL 17OCT04.txt

tctggggtgg 900

aggtagcacc actgcagagc ttcattgctgc ggggtggtgt tgtagatgat
ccagtcgtag 960

caggagcgct gggcgtggtg cctaaaaatg tctttcagta gcaagctgat
tgccaggggc 1020

aggcccttgg tgtaagtgtt tacaaagcgg ttaagctggg atgggtgcat
acgtggggat 1080

atgagatgca tcttgactg tatttttagg ttggctatgt tcccagccat
atccctccgg 1140

ggattcatgt tgtgcagaac caccagcaca gtgtatccgg tgcacttggg
aaatttgtca 1200

tgtagcttag aaggaaatgc gtggaagaac ttggagacgc ctttgtgacc
tccaagattt 1260

tccatgcatt cgtccataat gatggcaatg ggccacggg cggcggcctg
ggcgaagata 1320

tttctgggat cactaacgtc atagttgtgt tccaggatga gatcgtcata
ggccattttt 1380

acaaagcgcg ggcggagggt gccagactgc ggtataatgg ttccatccgg
cccaggggcg 1440

tagttaccct cacagatttg catttccac gctttgagtt cagatggggg
gatcatgtct 1500

acctgcgggg cgatgaagaa aacggtttcc ggggtagggg agatcagctg
ggaagaaagc 1560

aggttcctga gcagctgcga cttaccgcag ccggtgggcc cgtaaatcac
acctattacc 1620

gggtgcaact ggtagttaag agagctgcag ctgccgtcat ccctgagcag
gggggccact 1680

sequence listing US1 Amended GL 17OCT04.txt

tcgttaagca tgtccctgac tcgcatgttt tccctgacca aatccgccag
aaggcgctcg 1740

ccgcccagcg atagcagttc ttgcaaggaa gcaaagtttt tcaacggttt
gagaccgtcc 1800

gccgtaggca tgcttttgag cgtttgacca agcagttcca ggcgggtcca
cagctcggtc 1860

acctgtctta cggcatctcg atccagcata tctcctcggt tcgcgggttg
gggcggcttt 1920

cgctgtacgg cagtagtcgg tgctcgacca gacgggccag ggtcatgtct
ttcacgggc 1980

gcagggtcct cgtcagcgta gtctgggtca cgggaagggt gtgcgctccg
ggctgcgcgc 2040

tggccagggt gcgcttgagg ctggtcctgc tgggtgtgaa gcgctgccgg
tcttcgccct 2100

gcgcgtcggc caggtagcat ttgaccatgg tgtcatagtc cagccccctc
gcggcggtggc 2160

ccttggcgcg cagcttgccc ttggaggagg cgccgcacga ggggcagtgc
agacttttga 2220

gggcgtagag cttgggcgcg agaaataaccg attccgggga gtaggcattc
gcgccgcagg 2280

ccccgcagac ggtctcgcac tccacgagcc aggtgagctc tggccggtcg
gggtcaaaaa 2340

ccaggtttcc cccatgcttt ttgatgcgtt tcttacctct ggtttccatg
agccggtgtc 2400

cacgctcggg gacgaaaagg ctgtccgtgt ccccgataac agacttgaga
ggcctgtcct 2460

cgagcggtgt tccgcggtcc tcctcgata gaaactcgga ccactctgag
acaaaggctc 2520

sequence listing US1 Amended GL 17OCT04.txt

```

gcgtccaggc cagcacgaag gaggctaagt gggaggggta gcggtcgttg
tccactaggg 2580

gggtccactcg ctccagggtg tgaagacaca tgtcgccctc ttcggcatca
aggaagggtga 2640

ttggtttgta ggtgtaggcc acgtgaccgg gtgttcctga aggggggcta
taaaaggggg 2700

tgggggcgcg ttcgtcctca ctctcttccg catcgctgtc tgcgagggcc
agctgttggg 2760

gtgagtactc cctctgaaaa gcgggcatga cttctgcgct aagattgtca
gtttcaaaa 2820

acgaggagga tttgatattc acctggcccg cggatgatgcc tttgagggtg
gccgcatcca 2880

tctggtcaga aaagacaatc tttttgttgt caagcttggg ggcaaacgac
ccgtagaggg 2940

cgttggacag caacttggcg atggagcgca gggtttggtt tttgtcgca
tcggcgcgct 3000

ccttggccgc gatgtttagc tgcacgtatt cgcgcgcaac gcaccgccat
tcgggaaaga 3060

cgggtggtgcg ctctgcgggc accagggtgca cgcgccaacc gcggttgtgc
agggtgacaa 3120

ggtcaacgct ggtggctacc tctccgcgta ggcgctcggt ggtccagcag
aggcgccgc 3180

ccttgcgcga gcagaatggc ggtagggggt ctagctgcgt ctctccggg
gggtctgcgt 3240

ccacggtaaa gaccccgggc agcaggcgcg cgtcgaagta gtctatcttg
catccttgca 3300

agtctagcgc ctgctgccat gcgcgggccc caagcgcgcg ctctgtatggg

```



```

sequence listing US1 Amended GL 17OCT04.txt
ttgagtggg 3360
gaccccatgg catggggtgg gtgagcgcgg aggcgtacat gccgcaaag
tcgtaaacgt 3420
agaggggctc tctgagtatt ccaagatatg tagggtagca tcttccaccg
cggatgctgg 3480
cgcgcacgta atcgtatagt tcgtgcgagg gagcgaggag gtcgggaccg
aggttgctac 3540
gggcgggctg ctctgctcgg aagactatct gcctgaagat ggcattgtgag
ttggatgata 3600
tggttgacg ctggaagacg ttgaagctgg cgtctgtgag acctaccgcg
tcacgcacga 3660
aggaggcgta ggagtcgcgc agcttggtga ccagctcggc ggtgacctgc
acgtctaggg 3720
cgagtagtc cagggtttcc ttgatgatgt catacttate ctgtcccttt
ttttccaca 3780
gctcgcggtt gaggacaaac tcttcgcggt ctttccagta ctctggatc
ggaaaccctg 3840
cggcctccga acggttaagag cctagcatgt agaactggtt gacggcctgg
taggcgcagc 3900
atcccttttc tacgggtagc gcgtatgcct gcgcggcctt ccggagcgag
gtgtgggtga 3960
gcgcaaaggc gtccctgacc atgactttga ggtactggta tttgaagtca
gtgtcgtcgc 4020
atccgccctg ctcccagagc aaaaagtccg tgcgcttttt ggaacgcgga
tttggcaggg 4080
cgaagggtgac atcgttgaag agtatctttc ccgcgcgagg cataaagttg
cgtgtgatgc 4140

```

sequence listing US1 Amended GL 17OCT04.txt

ggaaggggtcc cggcacctcg gaacggttgt taattacctg ggcggcgagc
acgatctcgt 4200

caaagccggtt gatgttgtgg cccacaatgt aaagttccaa gaagcgcggg
atgcccttga 4260

tggaaggcaa ttttttaagt tcctcgtagg tgagctcttc aggggagctg
agcccgtgct 4320

ctgaaagggc ccagtctgca agatgagggt tggaagcgac gaatgagctc
cacaggtcac 4380

gggccattag catttgcagg tggtcgcaa aggtcctaaa ctggcgacct
atggccattt 4440

tttctggggt gatgcagtag aaggtaagcg ggtcttggtc ccagcgggtc
catccaaggt 4500

tcgcggttag gtctcgcgcg gcagtcacta gaggctcatc tccgccgaac
ttcatgacca 4560

gcatgaaggg cagcagctgc ttcccaaagg ccccatcca agtataggtc
tctacatcgt 4620

aggtgacaaa gagacgctcg gtgcgaggat gcgagccgat cgggaagaac
tggatctccc 4680

gccaccaatt ggaggagtgg ctattgatgt ggtgaaagta gaagtccttg
cgacgggccg 4740

aacactcgtg ctggcttttg taaaaacgtg cgcagtactg gcagcgggtg
acgggctgta 4800

catcctgcac gaggttgacc tgacgaccgc gcacaaggaa gcagagtggg
aatttgagcc 4860

cctcgcttgg cgggtttggc tgggtggtctt ctacttcggc tgcttgcct
tgaccgtctg 4920

gctgctcgag gggagttagc gtggatcgga ccaccacgcc gcgcgagccc
aaagtccaga 4980

sequence listing US1 Amended GL 17OCT04.txt

```

tgtccgcgcg cggcggtcgg agcttgatga caacatcgcg cagatgggag
ctgtccatgg 5040
tctggagctc ccgcggcgtc aggtcaggcg ggagctcctg caggtttacc
tcgcatagac 5100
gggtcagggc gcgggctaga tccaggtgat acctaatttc caggggctgg
ttggtggcgg 5160
cgtcgatggc ttgcaagagg ccgcaccccc gcggcgcgac tacggtaccg
cgcggcgggc 5220
ggtgggcccgc ggggggtgtcc ttggatgatg catctaaaag cggtgacgcg
ggcgagcccc 5280
cggaggtagg gggggctccg gacccgccgg gagagggggc aggggcacgt
cggcgccgcg 5340
cgcgggcagg agctggtgct gcgcgcgtag gttgctggcg aacgcgacga
cgcggcgggt 5400
gatctcctga atctggcgcc tctgcgtgaa gacgacgggc ccggtgagct
tgagcctgaa 5460
agagagtctg acagaatcaa tttcgggtgc gttgacggcg gcctggcgca
aaatctcctg 5520
cacgtctcct gagttgtctt gataggcgat ctcggccatg aactgctcga
tctcttcctc 5580
ctggagatct ccgcgtccgg ctcgctccac ggtggcggcg aggtcgttgg
aaatgcgggc 5640
catgagctgc gagaaggcgt tgaggcctcc ctcgttccag acgcggctgt
agaccacgcc 5700
cccttcggca tcgcgggcgc gcatgaccac ctgcgcgaga ttgagctcca
cgtgccgggc 5760
gaagacggcg tagtttcgca ggcgctgaaa gaggtagtgt aggggtggtg

```

sequence listing US1 Amended GL 17OCT04.txt

cggtgtgttc 5820

tgccacgaag aagtacataa cccagcgtcg caacgtggat tcgttgatat
ccccaaggc 5880

ctcaaggcgc tccatggcct cgtagaagtc cacggcgaag ttgaaaaact
gggagttgcg 5940

cgccgacacg gttaactcct cctccagaag acggatgagc tcggcgacag
tgtcgcgcac 6000

ctcgcgtca aaggctacag gggcctcttc ttcttcttca atctcctctt
ccataagggc 6060

ctccccctt tcttcttctg gcggcggtgg gggagggggg acacggcggc
gacgacggcg 6120

caccgggagg cggtcgacaa agcgcctgat catctccccg cggcgacggc
gcatggctc 6180

ggtgacggcg cggccgttct cgcggggggc cagttggaag acgccgcccg
tcatgtcccc 6240

gttatgggtt ggcggggggc tgccatgcgg cagggatacg gcgctaacga
tgcattctaa 6300

caattgttgt gtaggtactc cgccgccgag ggacctgagc gagtccgcat
cgaccggaic 6360

ggaaaacctc tcgagaaagg cgtctaacca gtcacagtcg caaggtaggc
tgagcaccgt 6420

ggcgggcggc agcgggcggc ggtcgggggt gtttctggcg gaggtgctgc
tgatgatgta 6480

attaaagtag gcggtcttga gacggcggat ggtcgacaga agcaccatgt
ccttgggtcc 6540

ggcctgctga atgcgcaggc ggtcggccat gccccaggct tcgttttgac
atcggcgag 6600

sequence listing US1 Amended GL 17OCT04.txt

gtctttgtag tagtcttgca tgagccttc taccggcact tcttcttctc
cttcctcttg 6660

tcctgcatct cttgcatcta tcgctgcggc ggcggcggag tttggccgta
ggtggcgccc 6720

tcttcctccc atgcgtgtga ccccgaaagg cctcatcggc tgaagcaggg
ctaggtcggc 6780

gacaacgcgc tcggctaata tggcctgctg cacctgcgtg agggtagact
ggaagtcac 6840

catgtccaca aagcgggtgt atgcgcccgt gttgatggtg taagtgcagt
tggccataac 6900

ggaccagtta acggtctggt gacccggctg cgagagctcg gtgtacctga
gacgcgagta 6960

agccctcgag tcaaatacgt agtcgttgca agtccgcacc aggtactggt
atcccaccaa 7020

aaagtgcggc ggcggtctggc ggtagagggg ccagcgtagg gtggccgggg
ctccgggggc 7080

gagatcttcc aacataaggc gatgatatcc gtagatgtac ctggacatcc
agtgatgcc 7140

ggcggcgggtg gtggaggcgc gcggaaagtc gcggacgcgg ttccagatgt
tgcgagcgg 7200

caaaaagtgc tccatggtcg ggacgctctg gccggtcagg cgcgcgcaat
cgttgacgct 7260

ctaccgtgca aaaggagagc ctgtaagcgg gcactcttcc gtggtctggt
ggataaattc 7320

gcaaggggat catggcggac gaccgggggt cgagccccgt atccggccgt
ccgccgtgat 7380

ccatgcgggt accgcccgcg tgtcgaaccc aggtgtgcga cgtcagacaa
cgggggagtg 7440

sequence listing US1 Amended GL 17OCT04.txt

```

ctccttttgg cttccttcca ggcgcggcgg ctgctgcgct agcttttttg
gccactggcc 7500

gcgcgcagcg taagcgggta ggctggaaa cgaaagcatt aagtggctcg
ctccctgtag 7560

ccggagggtt attttccaag ggttgagtcg cgggaccccc ggttcgagtc
tcggaccggc 7620

cggactgcgg cgaacggggg tttgcctccc cgatcatgcaa gaccccgctt
gcaaattcct 7680

ccggaaacag ggacgagccc cttttttgct tttcccagat gcatccggtg
ctgcggcaga 7740

tgcgcccccc tcctcagcag cggcaagagc aagagcagcg gcagacatgc
agggcaccct 7800

cccctcctcc taccgctca ggagggggcg catccgcggt tgacgcggca
gcagatggtg 7860

attacgaacc cccgcggcgc cgggcccggc actacctgga cttggaggag
ggcgagggcc 7920

tggcgcggtt aggagcggcc tctcctgagc ggtacccaag ggtgcagctg
aagcgtgata 7980

cgcgtagggc gtacgtgccg cggcagaacc tgtttcgcga ccgcgagggg
gaggagcccc 8040

aggagatgcg ggatcgaaag ttccacgcag ggcgcgagct gcggcatggc
ctgaatcgcg 8100

agcggttgct gcgcgaggag gactttgagc ccgacgcgcg aaccgggatt
agtcccgcgc 8160

gcgcacacgt ggcggccgcc gacctggtaa ccgcatacga gcagacggtg
aaccaggaga 8220

ttaactttca aaaaagcttt aacaaccacg tgcgtacgct tgtggcgcg

```

```

sequence listing US1 Amended GL 17OCT04.txt
gaggaggtgg      8280
ctataggact gatgcatctg tgggactttg taagcgcgct ggagcaaac
ccaaatagca      8340
agccgctcat ggcgcagctg ttccttatag tgcagcacag cagggacaac
gaggcattca      8400
gggatgcgct gctaaacata gtagagcccg agggccgctg gctgctcgat
ttgataaaca      8460
tcctgcagag catagtggcg caggagcgca gcttgagcct ggctgacaag
gtggccgcca      8520
tcaactattc catgcttagc ctgggcaagt tttacgcccg caagatatac
catacccctt      8580
acgttcccat agacaaggag gtaaagatcg aggggttcta catgcgcgctg
gcgctgaagg      8640
tgcttacctt gagcgacgac ctgggcgttt atcgcaacga gcgcatccac
aaggccgtga      8700
gcgtgagccg gcggcgcgag ctcagcgacc gcgagctgat gcacagcctg
caaaggggccc      8760
tggctggcac gggcagcggc gatagagagg ccgagtccta ctttgacgcg
ggcgtgacc      8820
tgcgctgggc cccaagccga cgcgccctgg aggcagctgg ggccggacct
gggctggcgg      8880
tggcaccgcg gcgcgctggc aacgtcggcg gcgtggagga atatgacgag
gacgatgagt      8940
acgagccaga ggacggcgag tactaagcgg tgatgtttct gatcagatga
tgcaagacgc      9000
aacggacccg gcggtgcggg cggcgctgca gagccagccg tccggcctta
actccacgga      9060

```

sequence listing US1 Amended GL 17OCT04.txt

cgactggcgc caggtcatgg accgcatcat gtcgctgact gcgcgcaatc
ctgacgcgtt 9120

ccggcagcag ccgcaggcca accggctctc cgcaattctg gaagcggtagg
tcccggcgcg 9180

cgcaaacccc acgcacgaga aggtgctggc gatcgtaaac gcgctggccg
aaaacagggc 9240

catccggccc gacgaggccg gcctgggtcta cgacgcgctg cttcagcgcg
tggctcggtta 9300

caacagcggc aacgtgcaga ccaacctgga ccggctgggtg ggggatgtgc
gcgaggccgt 9360

ggcgcagcgt gagcgcgcgc agcagcaggg caacctgggc tccatgggttg
cactaaacgc 9420

cttcctgagt acacagcccc ccaacgtgcc gcggggacag gaggactaca
ccaactttgt 9480

gagcgcactg cggctaattg tgactgagac accgcaaagt gaggtgtacc
agtctggggc 9540

agactatttt ttccagacca gtagacaagg cctgcagacc gtaaacctga
gccaggcttt 9600

caaaaacttg caggggctgt ggggggtgcg ggctcccaca ggcgaccgcg
cgaccgtgtc 9660

tagcttgctg acgcccact cgcgctgtt gctgctgcta atagcgccct
tcacggacag 9720

tggcagcgtg tcccgggaca catacctagg tcaattgctg acactgtacc
gcgaggccat 9780

aggtcaggcg catgtggacg agcatacttt ccaggagatt acaagtgtca
gccgcgcgt 9840

ggggcaggag gacacgggca gcctggaggc aaccctaaac tacctgctga
ccaaccggcg 9900

sequence listing US1 Amended GL 17OCT04.txt

gcagaagatc ccctcgttgc acagtttaaa cagcgaggag gagcgcatTT
 tgcgctacgt 9960

gcagcagagc gtgagcctta acctgatgcg cgacggggta acgcccagcg
 tggcgctgga 10020

catgaccgcg cgcaacatgg aaccgggcat gtatgcctca aaccggccgt
 ttatcaaccg 10080

cctaattggac tacttgcata gcgcggccgc cgtgaacccc gagtatttca
 ccaatgccat 10140

cttgaacccg cactggctac cgccccctgg tttctacacc gggggattcg
 agtgccccga 10200

gggtaacgat ggattcctct gggacgacat agacgacagc gtgttttccc
 cgcaaccgca 10260

gaccttgcta gagttgcaac agcgcgagca ggcagaggcg gcgctgcgaa
 aggaaagctt 10320

ccgcaggcca agcagcttgt ccgatctagg cgctgcggcc ccgcggtcag
 atgctagtag 10380

cccatttcca agcttgatag ggtctcttac cagcactcgc accacccgcc
 cgcgctgct 10440

gggcgaggag gagtaccta acaactcgct gctgcagccg cagcgcgaaa
 aaaacctgcc 10500

tccggcattt cccaacaacg ggatagagag cctagtggac aagatgagta
 gatggaagac 10560

gtacgcgcag gagcacaggg acgtgccagg cccgcgcccc cccacccgtc
 gtcaaaggca 10620

cgaccgtcag cggggtctgg tgtgggagga cgatgactcg gcagacgaca
 gcagcgtcct 10680

ggattttggga gggagtggca acccgtttgc gcaccttcgc cccaggctgg

sequence listing US1 Amended GL 17OCT04.txt

ggagaatggt 10740

ttaaaaaaaaaaaagcatga tgcaaaataa aaaactcacc aaggccatgg
caccgagcgt 10800

tggttttctt gtattcccct tagtatgcgg cgcgcggcga tgtatgagga
aggtcctcct 10860

ccctcctacg agagtgtggt gagcgcggcg ccagtggcgg cggcgctggg
ttctcccttc 10920

gatgctcccc tggaccgcgc gtttgtgcct ccgcggtacc tgcggcctac
cgggggggaga 10980

aacagcatcc gttactctga gttggcaccc ctattcgaca ccaccggtg
gtacctgggtg 11040

gacaacaagt caacggatgt ggcacccctg aactaccaga acgaccacag
caactttctg 11100

accacggtca ttcaaaacaa tgactacagc ccggggggagg caagcacaca
gaccatcaat 11160

cttgacgacc ggtcgcactg gggcggcgac ctgaaaacca tcctgcatac
caacatgcca 11220

aatgtgaacg agttcatggt taccaataag ttttaaggcgc gggatgatgg
gtcgcgcttg 11280

cctactaagg acaatcaggt ggagctgaaa tacgagtggg tggagttcac
gctgcccag 11340

ggcaactact ccgagaccat gaccatagac cttatgaaca acgcgatcgt
ggagcactac 11400

ttgaaagtgg gcagacagaa cgggggttctg gaaagcgaca tcggggtaaa
gtttgacacc 11460

cgcaacttca gactggggtt tgaccccgtc actggtcttg tcatgcctgg
ggtatataca 11520

sequence listing US1 Amended GL 17OCT04.txt

aacgaagcct tccatccaga catcattttg ctgccaggat gcggggtgga
cttcacccac 11580

agccgcctga gcaacttggt gggcatccgc aagcggcaac cttccagga
gggcttttagg 11640

atcacctacg atgatctgga gggtggtaac attcccgcac tgttgatgt
ggacgcctac 11700

caggcgagct tgaaagatga caccgaacag ggcgggggtg gcgcaggcgg
cagcaacagc 11760

agtggcagcg gcgcggaaga gaactccaac gcggcagccg cggcaatgca
gccggtggag 11820

gacatgaacg atcatgccat tcgcggcgac acctttgcca cacgggctga
ggagaagcgc 11880

gctgaggccg aagcagcggc cgaagctgcc gccccgctg cgcaaccgga
ggtcgagaag 11940

cctcagaaga aaccggtgat caaaccctg acagaggaca gcaagaaacg
cagttacaac 12000

ctaataagca atgacagcac cttcacccag taccgcagct ggtaccttgc
atacaactac 12060

ggcgaccctc agaccggaat ccgctcatgg accctgcttt gcactcctga
cgtaacctgc 12120

ggctcggagc aggtctactg gtcgttgcca gacatgatgc aagaccccg
gaccttccgc 12180

tccacgcgcc agatcagcaa ctttccggtg gtgggcgccg agctgttgcc
cgtgcactcc 12240

aagagcttct acaacgacca ggccgtctac tcccaactca tccgccagtt
tacctctctg 12300

acccacgtgt tcaatcgctt tcccgagaac cagattttgg cgcgcccccc
agccccacc 12360

sequence listing US1 Amended GL 17OCT04.txt

atcaccaccg tcagtgaaaa cgttcctgct ctcacagatc acgggacgct
accgctgcgc 12420

aacagcatcg gaggagtcca gcgagtgacc attactgacg ccagacgccg
caccgcccc 12480

tacgtttaca aggccctggg catagtctcg ccgcgcgtcc tatcgagccg
cactttttga 12540

gcaagcatgt ccataccttat atcgcccagc aataacacag gctggggcct
gcgcttccca 12600

agcaagatgt ttggcggggc caagaagcgc tccgaccaac acccagtgcg
cgtgcgcggg 12660

cactaccgcg cgccctgggg cgcgacaaa cgcgcccgca ctgggcgcac
caccgtcgat 12720

gacgccatcg acgcggtggt ggaggaggcg cgcaactaca cgcccacgcc
gccaccagtg 12780

tccacagtgg acgcggccat tcagaccgtg gtgcgcggag cccggcgcta
tgctaaaatg 12840

aagagacggc ggaggcgcgt agcacgtcgc caccgccgcc gaccggcac
tgccgcccc 12900

cgcgcgccgg cgccctgct taaccgcgca cgtcgcaccg gccgacgggc
ggccatgcgg 12960

gccgctcgaa ggctggccgc gggattgtc actgtgcccc ccagggtccag
gcgacgagcg 13020

gccgcgcgag cagccgcggc cattagtgt atgactcagg gtcgcagggg
caacgtgtat 13080

tgggtgcgcg actcggttag cggcctgcgc gtgcccgtgc gcacccgccc
cccgcgcaac 13140

tagattgcaa gaaaaaacta cttagactcg tactgttgta tgtatccagc

sequence listing US1 Amended GL 17OCT04.txt

ggcggcgcg 13200

cgcaacgaag ctatgtccaa gcgcaaaatc aaagaagaga tgctccaggt
catcgcgccg 13260

gagatctatg gcccccgaa gaaggaagag caggattaca agccccgaaa
gctaaagcgg 13320

gtcaaaaaga aaaagaaaga tgatgatgat gaacttgacg acgaggtgga
actgctgcac 13380

gctaccgcgc ccaggcgacg ggtacagtgg aaaggtcgac gcgtaaacg
tgttttgcga 13440

cccggcacca ccgtagtctt tacgcccggg gagcgctcca cccgcaccta
caagcgcggtg 13500

tatgatgagg tgtacggcga cgaggacctg cttgagcagg ccaacgagcg
cctcggggag 13560

tttgccctacg gaaagcggca taaggacatg ctggcgttgc cgctggacga
gggcaaccca 13620

acacctagcc taaagcccgt aacctgcag cagggtgctgc ccgcgcttgc
accgtccgaa 13680

gaaaagcgcg gcctaaagcg cgagtctggt gacttggcac ccaccgtgca
gctgatggta 13740

cccaagcgcc agcgactgga agatgtcttg gaaaaaatga ccgtggaacc
tgggctggag 13800

cccgaggtcc gcgtgcggcc aatcaagcag gtggcgccgg gactgggcgt
gcagaccgtg 13860

gacgttcaga taccactac cagtagcacc agtattgcca ccgccacaga
gggcatggag 13920

acacaaacgt ccccggttgc ctcagcggtg gcggatgccg cgggtgcaggc
ggtcgctgcg 13980

sequence listing US1 Amended GL 17OCT04.txt

```

gccgcgtcca agacctctac ggaggtgcaa acggaccctg ggatgtttcg
cgtttcagcc 14040

ccccggcgcc cgcgcggttc gaggaagtac ggcgccgcca gcgcgctact
gcccgaatat 14100

gccctacatc cttccattgc gcctaccccc ggctatcgtg gctacaccta
ccgccccaga 14160

agacgagcaa ctacccgacg ccgaaccacc actggaaccc gccgccgccc
tcgccgtcgc 14220

cagcccgtgc tggccccgat ttccgtgcgc agggtggttc gcgaaggagg
caggaccctg 14280

gtgctgccaa cagcgcgcta ccaccccagc atcgtttaaa agccggtctt
tgtggttctt 14340

gcagatatgg ccctcacctg ccgcctccgt ttcccgggtgc cgggattccg
aggaagaatg 14400

caccgtagga ggggcatggc cggccacggc ctgacgggcg gcatgcgtcg
tgcgaccac 14460

cggcggcgcc gcgcgtcgca ccgtcgcgtg cgcggcggtg tcctgcccct
ccttattcca 14520

ctgatcgccg cggcgattgg cggcgtgccc ggaattgcat ccgtggcctt
gcaggcgag 14580

agacactgat taaaaacaag ttgcatgtgg aaaaatcaaa ataaaaagtc
tggactctca 14640

cgctcgcttg gtcctgtaac tattttgtag aatggaagac atcaactttg
cgtctctggc 14700

cccgcgacac ggctcgcgcc cgttcatggg aaactggcaa gatatcggca
ccagcaatat 14760

gagcgggtggc gccttcagct ggggctcgct gtggagcggc attaaaaatt
tcggttccac 14820

```

sequence listing US1 Amended GL 17OCT04.txt

cgttaagaac tatggcagca aggcctggaa cagcagcaca ggccagatgc
tgagggataa 14880

gttgaaagag caaaatttcc aacaaaaggt ggtagatggc ctggcctctg
gcattagcgg 14940

ggtggtggac ctggccaacc aggcagtgca aaataagatt aacagtaagc
ttgatccccg 15000

ccctcccgtg gaggagcctc caccggccgt ggagacagtg tctccagagg
ggcgtggcga 15060

aaagcgctccg cgccccgaca gggaagaaac tctggtgacg caaatagacg
agcctccctc 15120

gtacgaggag gcactaaagc aaggcctgcc caccaccggt cccatcgcg
ccatggctac 15180

cggagtgctg ggccagcaca caccgtaac gctggacctg cttccccccg
ccgacaccca 15240

gcagaaacct gtgctgccag gcccgaccgc cgttggtgta acccgtccta
gccgcgcgtc 15300

cctgcgccgc gccgcccagc gtccgcgacg gttgcggccc gtagccagtg
gcaactggca 15360

aagcacactg aacagcatcg tgggtctggg ggtgcaatcc ctgaagcgcc
gacgatgctt 15420

ctgaatagct aacgtgtcgt atgtgtgtca tgtatgcgtc catgtcgccg
ccagaggagc 15480

tgctgagccg ccgcgcgccc gctttccaag atggctaccc cttcgatgat
gccgcagtgg 15540

tcttacatgc acatctcggg ccaggacgcc tcggagtacc tgagccccgg
gctggtgcag 15600

tttccccg cgccaggagc gtacttcagc ctgaataaca agtttagaaa

sequence listing US1 Amended GL 17OCT04.txt

ccccacggtg 15660

gcgcctacgc acgacgtgac cacagaccgg tcccagcggt tgacgctgcg
gttcatccct 15720

gtggaccgtg aggatactgc gtactcgtac aaggcgcggt tcaccctagc
tgtgggtgat 15780

aaccgtgtgc tggacatggc ttccacgtac tttgacatcc gcggcggtgct
ggacaggggc 15840

cctactttta agccctactc tggcactgcc tacaacgccc tggctcccaa
gggtgcccc 15900

aatccttgcg aatgggatga agctgctact gctcttgaaa taaacctaga
agaagaggac 15960

gatgacaacg aagacgaagt agacgagcaa gctgagcagc aaaaaactca
cgtatttggg 16020

caggcgcttt attctggtat aaatattaca aaggagggta ttcaaatagg
tgtcgaagg 16080

caaacaccta aatatgccga taaaacattt caacctgaac ctcaaatagg
agaatctcag 16140

tggtagcaaa ctgaaattaa tcatgcagct gggagagtcc ttaaaaagac
taccccaatg 16200

aaaccatggt acggttcata tgcaaaaccc acaaatgaaa atggagggca
aggcattctt 16260

gtaaagcaac aaaatggaaa gctagaaagt caagtggaaa tgcaattttt
ctcaactact 16320

gaggcgaccg caggcaatgg tgataacttg actcctaaag tggatttgta
cagtgaagat 16380

gtagatatag aaacccaga cactcatatt tcttacatgc ccactattaa
ggaaggtaac 16440

sequence listing US1 Amended GL 17OCT04.txt

tcacgagaac taatgggcca acaatctatg cccaacaggc ctaattacat
tgcttttagg 16500

gacaatttta ttggtctaata gtattacaac agcacgggta atatgggtgt
tctggcgggc 16560

caagcatcgc agttgaatgc tgtttagat ttgcaagaca gaaacacaga
gctttcatac 16620

cagcttttgc ttgattccat tggatgata accaggtact tttctatgtg
gaatcaggct 16680

gttgacagct atgatccaga tgtagaatt attgaaaatc atggaactga
agatgaactt 16740

ccaaattact gctttccact gggagggtgtg attaatacag agactcttac
caaggtaaaa 16800

cctaaaacag gtcaggaaaa tggatgggaa aaagatgcta cagaattttc
agataaaaaat 16860

gaaataagag ttggaaataa ttttgccatg gaaatcaatc taaatgcca
cctgtggaga 16920

aatttcctgt actccaacat agcgtgtat ttgcccagaca agctaaagta
cagtccttcc 16980

aacgtaaaaa tttctgataa cccaaacacc tacgactaca tgaacaagcg
agtgggtggc 17040

cccgggtag tggactgcta cattaacctt ggagcacgct ggtcccttga
ctatatggac 17100

aacgtcaacc catttaacca ccaccgcaat gctggcctgc gctaccgctc
aatgttgctg 17160

ggcaatggtc gctatgtgcc ctccacatc cagggtgcctc agaagttctt
tgccattaaa 17220

aacctccttc tcctgccggg ctcatcaccc tacgagtgga acttcaggaa
ggatgttaac 17280

sequence listing US1 Amended GL 17OCT04.txt

```

atggtttctgc agagctccct aggaaatgac ctaagggttg acggagccag
cattaagttt 17340
gatagcattt gcctttacgc caccttcttc cccatggccc acaacaccgc
ctccacgctt 17400
gaggccatgc ttagaaacga caccaacgac cagtccttta acgactatct
ctccgcccgc 17460
aacatgctct accctatacc cgccaacgct accaactgtc ccatatccat
cccctcccgc 17520
aactgggcggt ctttccgcgg ctgggccttc acgcgctta agactaagga
aaccatca 17580
ctgggctcgg gctacgacc ttattacacc tactctggct ctatacccta
cctagatgga 17640
accttttacc tcaaccacac ctttaagaag gtggccatta cctttgactc
ttctgtcagc 17700
tggcctggca atgaccgcct gcttaccccc aacgagtttg aaattaagcg
ctcagttgac 17760
ggggagggtt acaacgttgc ccagtgtaac atgaccaaag actggttcct
ggtacaaatg 17820
ctagctaact acaacattgg ctaccagggc ttctatatcc cagagagcta
caaggaccgc 17880
atgtactcct tctttagaaa ctccagccc atgagccgtc aggtggtgga
tgatactaaa 17940
tacaaggact accaacaggt gggcatccta caccaacaca acaactctgg
attgttggc 18000
taccttgccc ccaccatgcg cgaaggacag gcctaccctg ctaacttccc
ctatccgctt 18060
ataggcaaga ccgcagttga cagcattacc cagaaaaagt ttctttgcga

```

sequence listing US1 Amended GL 17OCT04.txt

tcgcaccctt 18120

tggcgcatcc cattctccag taactttatg tccatgggcg cactcacaga
cctggggccaa 18180

aacctttctt acgccaactc cgcccacgcg ctagacatga cttttgaggt
ggatcccatg 18240

gacgagccca cccttcttta tgttttggtt gaagtctttg acgtgggtccg
tgtgcaccgg 18300

ccgcaccgcg gcgtcatcga aaccgtgtac ctgcgcacgc ctttctcggc
cggcaacgcc 18360

acaacataaa gaagcaagca acatcaaaa cagctgccgc catgggctcc
agtgagcagg 18420

aactgaaagc cattgtcaaa gatcttggtt gtgggccata ttttttgggc
acctatgaca 18480

agcgctttcc aggctttggt tctccacaca agctcgcttg cgccatagtc
aatacggccg 18540

gtcgcgagac tgggggcgta cactggatgg cctttgcctg gaacccgcac
tcaaaaacat 18600

gctacctctt tgagcccttt ggcttttctg accagcgact caagcaggtt
taccagttag 18660

agtacgagtc actcctgcgc cgtagcgcca ttgctttctt ccccgaccgc
tgtataacgc 18720

tggaaaagtc cacccaaagc gtacaggggc ccaactcggc cgcctgtgga
ctattctgct 18780

gcatgtttct ccacgccttt gccaaactggc cccaaactcc catggatcac
aaccacacca 18840

tgaaccttat taccgggta cccaactcca tgctcaacag tccccaggta
cagcccaccc 18900

sequence listing US1 Amended GL 17OCT04.txt

tgcgtcgcaa	ccaggaacag	ctctacagct	tcctggagcg	ccactcgccc
tacttccgca	18960			
gccacagtgc	gcagattagg	agcgccactt	ctttttgtca	cttgaaaaac
atgtaaaaat	19020			
aatgtactag	agacactttc	aataaaggca	aatgctttta	ttgtacact
ctcgggtgat	19080			
tatttaccct	cacccttgcc	gtctgcgccg	tttaaaaatc	aaaggggttc
tgccgcgcac	19140			
cgctatgcgc	cactggcagg	gacacgttgc	gatactggtg	tttagtgctc
cacttaaaact	19200			
caggcacaac	catccgcggc	agctcgggtga	agttttcact	ccacaggctg
cgcaccatca	19260			
ccaacgcggt	tagcaggtcg	ggcgccgata	tcttgaagtc	gcagttgggg
cctccgccct	19320			
gcgcgcgcga	gttgcgatac	acaggggttc	agcactggaa	cactatcagc
gccgggtggt	19380			
gcacgctggc	cagcacgctc	ttgtcggaga	tcagatccgc	gtccagggtcc
tccgcgttgc	19440			
tcaggggcgaa	cggagtcaac	tttggtagct	gccttcccaa	aaagggcgcg
tgcccaggct	19500			
ttgagttgca	ctcgcaccgt	agtggcatca	aaaggtgacc	gtgcccggtc
tgggcgttag	19560			
gatacagcgc	ctgcataaaa	gccttgatct	gcttaaaagc	cacctgagcc
tttgcgcctt	19620			
cagagaagaa	catgccgcaa	gacttgccgg	aaaactgatt	ggccggacag
gccgcgtcgt	19680			
gcacgcagca	ccttgcgtcg	gtgttgagga	tctgcaccac	atttcgcccc
caccggttct	19740			

sequence listing US1 Amended GL 17OCT04.txt

tcacgatctt ggccttgcta gactgctcct tcagcgcgcg ctgcccgttt
tcgctcgtca 19800

catccatttc aatcacgtgc tccttattta tcataatgct tccgtgtaga
cacttaagct 19860

cgcttctgat ctcagcgcag cgggtgcagcc acaacgcgca gcccgtgggc
tcgtgatgct 19920

tgtaggtcac ctctgcaaac gactgcaggt acgcctgcag gaatcgcccc
atcatcgtca 19980

caaaggtctt gttgctggtg aagggtcagct gcaacccgcg gtgctcctcg
ttcagccagg 20040

tcttgcatatc ggccgccaga gcttccactt ggtcaggcag tagtttgaag
ttcgccctta 20100

gatcgttatc cacgtggtac ttgtccatca gcgcgcgcgc agcctccatg
cccttctccc 20160

acgcagacac gatcggcaca ctcagcgggt tcatcacctg aatttcactt
tccgcttcgc 20220

tgggctcttc ctcttcctct tgcgtccgca taccacgcgc cactgggtcg
tcttcattca 20280

gccgccgcac tgtgcgctta cctcctttgc catgcttgat tagcaccggt
gggttgctga 20340

aaccacccat ttgtagcgcc acatcttctc tttcttctc gctgtccacg
attacctctg 20400

gtgatggcgg gcgctcgggc ttgggagaag ggcgcttctt tttcttcttg
ggcgcaatgg 20460

ccaaatccgc cgccgaggtc gatggccgcg ggctgggtgt gcgcggcacc
agcgcgtctt 20520

gtgatgagtc ttcctcgtcc tcggactcga tacgccgcct catccgcttt

sequence listing US1 Amended GL 17OCT04.txt

tttgggggcg 20580

cccggggagg cggcggcgac ggggacgggg acgacacgtc ctccatgggt
gggggacgtc 20640

gcgcgcgacc gcgtccgcgc tcgggggtgg tticgcgctg ctctctttcc
cgactggcca 20700

tttctttctc ctataggcag aaaaagatca tggagtcagt cgagaagaag
gacagcctaa 20760

ccgccccctc tgagttcgcc accaccgcct ccaccgatgc cgccaacgcg
cctaccacct 20820

tccccgtcga ggcacccccg cttgaggagg aggaagtgat tatcgagcag
gacccagggt 20880

ttgtaagcga agatgacgag gaccgctcag taccaacaga ggataaaaag
caagaccagg 20940

acaacgcaga ggcaaacgag gaacaagtcg ggcgggggga cgaaaggcat
ggcgactacc 21000

tagatgtggg agacgacgtg ctgttgaagc atctgcagcg ccagtgcgcc
attatctgcg 21060

acgcgttgca agagcgcagc gatgtgcccc tcgccatagc ggatgtcagc
cttgcctacg 21120

aacgccacct attctcaccg cgcgtacccc ccaaacgcca agaaaaaggc
acatgcgagc 21180

ccaacccgcg cctcaacttc taccctgtat ttgccgtgcc agagggtgctt
gccacctatc 21240

acatcttttt ccaaaactgc aagatacccc taccctgccc tgccaaccgc
agccgagcgg 21300

acaagcagct ggccttgcgg cagggcgctg tcatacctga tatgcctcg
ctcaacgaag 21360

sequence listing US1 Amended GL 17OCT04.txt

tgccaaaaat ctttgagggt cttggacgcg acgagaagcg cgcggcaaac
gctctgcaac 21420

aggaaaacag cgaaaatgaa agtcactctg gagtgttggt ggaactcgag
ggtgacaacg 21480

cgcgcctagc cgtactaaaa cgcagcatcg aggtcaccca ctttgcctac
ccggcactta 21540

acctacccc caaggtcatg agcacagtca tgagtgagct gatcgtgcgc
cgtgcgcagc 21600

ccctggagag ggatgcaaat ttgcaagaac aaacagagga gggcctaccc
gcagtggcg 21660

acgagcagct agcgcgctgg cttcaaacgc gcgagcctgc cgacttggag
gagcgacgca 21720

aactaatgat ggccgcagtg ctcgttaccg tggagcttga gtgcatgcag
cggttctttg 21780

ctgaccgga gatgcagcgc aagctagagg aaacattgca ctacaccttt
cgacagggct 21840

acgtacgcca ggcctgcaag atctccaacg tggagctctg caacctggtc
tcctaccttg 21900

gaattttgca cgaaaaccgc cttgggcaaa acgtgcttca ttccacgctc
aaggcgagg 21960

cgcgccgca ctacgtccgc gactgcgttt acttatttct atgctacacc
tggcagacgg 22020

ccatgggcgt ttggcagcag tgcttggagg agtgcaacct caaggagctg
cagaaactgc 22080

taaagcaaaa cttgaaggac ctatggacgg ctttcaacga gcgctccgtg
gccgcgcacc 22140

tggcggacat cattttcccc gaacgcctgc ttaaaaccct gcaacagggt
ctgccagact 22200

sequence listing US1 Amended GL 17OCT04.txt

tcaccagtca aagcatgttg cagaacttta ggaactttat cctagagcgc
tcaggaatct 22260

tgccccccac ctgctgtgca cttcctagcg actttgtgcc cattaagtac
cgcgaaatgcc 22320

ctccgccgct ttggggccac tgctaccttc tgcagctagc caactacctt
gcctaccact 22380

ctgacataat ggaagacgtg agcgggtgacg gtctactgga gtgtcactgt
cgctgcaacc 22440

tatgcacccc gcaccgctcc ctggtttgca attcgagct gcttaacgaa
agtcaaatta 22500

tcggtacctt tgagctgcag ggtccctcgc ctgacgaaaa gtccgcggct
ccgggggttg 22560

aactcactcc ggggctgtgg acgtcggctt accttcgcaa atttgtacct
gaggactacc 22620

acgcccacga gattagggtc tacgaagacc aatccccgcc gccaaatgcg
gagcttaccg 22680

cctgcgtcat taccagggc cacattcttg gccaatgca agccatcaac
aaagccccgc 22740

aagagtttct gctacgaaag ggacgggggg tttacttgga ccccagttcc
ggcgaggagc 22800

tcaacccaat cccccgccg ccgcagccct atcagcagca gccgcgggcc
cttgcttccc 22860

aggatggcac caaaaaagaa gctgcagctg ccgccgccac ccacggacga
ggaggaatac 22920

tgggacagtc aggcagagga ggttttggac gaggaggagg aggacatgat
ggaagactgg 22980

gagagcctag acgaggaagc ttccgaggtc gaagaggtgt cagacgaaac

sequence listing US1 Amended GL 17OCT04.txt

accgtcacc 23040

tcggtcgcat tcccctcgcc ggcgccccag aaatcggcaa ccggttccag
catggctaca 23100

acctccgctc ctcaggcgcc gccggcactg cccgttcgcc gacccaaccg
tagatgggac 23160

accactggaa ccagggccgg taagtccaag cagccgccgc cgttagccca
agagcaacaa 23220

cagcgccaag gctaccgctc atggcgcggg cacaagaacg ccatagtgtc
ttgcttgcaa 23280

gactgtgggg gcaacatctc cttcgcccgc cgctttcttc tctaccatca
cggcgtggcc 23340

ttcccccgta acatcctgca ttactaccgt catctctaca gcccatactg
caccggcggc 23400

agcggcagcg gcagcaacag cagcggccac acagaagcaa aggcgaccgg
atagcaagac 23460

tctgacaaag cccaagaaat ccacagcggc ggcagcagca ggaggaggag
cgctgcgtct 23520

ggcgcccaac gaaccgtat cgacccgca gcttagaaac aggatttttc
ccactctgta 23580

tgctatattt caacagagca ggggccaaga acaagagctg aaaataaaaa
acaggtctct 23640

gcgatccctc acccgagct gcctgtatca caaaagcgaa gatcagcttc
ggcgcacgct 23700

ggaagacgcg gaggctctct tcagtaaata ctgcgcgctg actcttaagg
actagtttcg 23760

cgccctttct caaatttaag cgcgaaaact acgtcatctc cagcgccac
accggcgcc 23820

sequence listing US1 Amended GL 17OCT04.txt

agcacctgtc gtcagcgcca ttatgagcaa ggaaattccc acgccctaca
tgtggagtta 23880

ccagccacaa atgggacttg cggctggagc tgcccaagac tactcaaccc
gaataaacta 23940

catgagcgcg ggaccccaca tgatatcccc ggtcaacgga atccgcgccc
accgaaaccg 24000

aattctcttg gaacaggcgg ctattaccac cacacctcgt aataacctta
atccccgtag 24060

ttggcccgtt gccctgggtg accaggaaag tcccgtccc accactgtgg
tacttcccag 24120

agacgcccag gccgaagttc agatgactaa ctcaagggcg cagcttgccg
gcggctttcg 24180

tcacagggtg cggtcgcccc ggcaggggtat aactcacctg acaatcagag
ggcgagggtat 24240

tcagctcaac gacgagtcgg tgagctctc gcttggctc cgtccggacg
ggacatttca 24300

gatcggcggc gccggccgtc cttcattcac gcctcgtcag gcaatcctaa
ctctgcagac 24360

ctcgtcctct gagccgcgt ctggaggcat tggaactctg caatttattg
aggagtttgt 24420

gccatcggtc tactttaacc ctttctcggg acctcccggc cactatccgg
atcaatttat 24480

tcctaacttt gacgcggtaa aggactcggc ggacggctac gactgaatgt
taagtggaga 24540

ggcagagcaa ctgcgcctga aacacctggt ccactgtcgc cgccacaagt
gctttgcccc 24600

cgactccggt gaggtttgct actttgaatt gcccaggat catatcgagg
gcccggcgca 24660

sequence listing US1 Amended GL 17OCT04.txt

cggcgtccgg cttaccgccc agggagagct tgcccgtagc ctgattcggg
agtttaccca 24720

gcgccccctg ctagttgagc gggacagggg accctgtgtt ctcactgtga
tttgcaactg 24780

tcctaacctt ggattacatc aagatctttg ttgccatctc tgtgctgagt
ataataaata 24840

cagaaattaa aatatactgg ggctcctatc gccatcctgt aaacgccacc
gtcttcaccc 24900

gccaagcaa accaaggcga accttacctg gtacttttaa catctctccc
tctgtgattt 24960

acaacagttt caaccagac ggagtgagtc tacgagagaa cctctccgag
ctcagctact 25020

ccatcagaaa aaacaccacc ctctttacct gccgggaacg tacgagtgcg
tcaccggccg 25080

ctgcaccaca cctaccgcct gaccgtaaac cagacttttt ccggacagac
ctcaataact 25140

ctgtttacca gaacaggagg tgagcttaga aaacccttag ggtattaggc
caaaggcgca 25200

gctactgtgg ggtttatgaa caattcaagc aactctacgg gctattctaa
ttcagggtttc 25260

tctaatacggg gttggggtta ttctctgtct tgtgattctc tttattctta
tactaacgct 25320

tctctgccta aggctcgccg cctgctgtgt gcacatttgc atttattgtc
agctttttta 25380

acgctggggg cgccacccaa gatgattagg tacataatcc taggtttact
cacccttgcg 25440

tcagcccacg gtaccaccca aaagggtggat tttaaggagc cagcctgtaa

sequence listing US1 Amended GL 17OCT04.txt

tgttacattc 25500

gcagctgaag ctaatgagtg caccactctt ataaaatgca ccacagaaca
tgaaaagctg 25560

cttattcgcc acaaaaacaa aattggcaag tatgctgttt atgctatttg
gcagccaggt 25620

gacactacag agtataatgt tacagttttc cagggtaaaa gtcataaaac
ttttatgtat 25680

acttttccat tttatgaaat gtgcgacatt accatgtaca tgagcaaaca
gtataagttg 25740

tggcccccac aaaattgtgt ggaaaacact ggcactttct gctgcactgc
tatgctaatt 25800

acagtgtctg ctttggctctg taccctactc tatattaaat acaaaagcag
acgcagcttt 25860

attgaggaaa agaaaatgcc ttaatttact aagttacaaa gctaattgtca
ccactaactg 25920

ctttactcgc tgcttgcaaa acaaattcaa aaagttagca ttataattag
aataggattt 25980

aaaccccccg gtcatttcct gctcaatacc attcccctga acaattgact
ctatgtggga 26040

tatgctccag cgctacaacc ttgaagtcag gcttcctgga tgtcagcatc
tgactttggc 26100

cagcacctgt cccgcggatt tgttccagtc caactacagc gaccaccct
aacagagatg 26160

accaacacaa ccaacgcggc cgccgctacc ggacttacat ctaccacaaa
tacaccccaa 26220

gtttctgcct ttgtcaataa ctgggataac ttgggcatgt ggtggttctc
catagcgctt 26280

sequence listing US1 Amended GL 17OCT04.txt

atgtttgtat gccttattat tatgtggctc atctgctgcc taaagcgcaa
acgcgcccga 26340

ccacccatct atagtcccat cattgtgcta cacccaaaca atgatggaat
ccatagattg 26400

gacggactga aacacatggt cttttctctt acagtatgat taaatgagac
atgattcctc 26460

gagtttttat attactgacc cttgttgccg ttttttgtgc gtgctccaca
ttggctgcgg 26520

tttctcacat cgaagtagac tgcattccag ccttcacagt ctatttgctt
tacggatttg 26580

tcaccctcac gctcatctgc agcctcatca ctgtggtcac cgcctttatc
cagtgcattg 26640

actgggtctg tgtgcgcttt gcatactca gacaccatcc ccagtacagg
gacaggacta 26700

tagctgagct tcttagaaat ggacggaatt attacagagc agcgcttgct
agaaagacgc 26760

agggcagcgg ccgagcaaca gcgcatgaat caagagctcc aagacatggt
taacttgcac 26820

cagtgcacaa ggggtatctt ttgtctggta aagcaggcca aagtcaccta
cgacagtaat 26880

accaccggac accgccttag ctacaagttg ccaaccaagc gtcagaaatt
ggtggcatg 26940

gtgggagaaa agccattac cataactcag cactcggtag aaaccgaagg
ctgcattcac 27000

tcaccttgtc aaggacctga ggatctctgc acccttatta agaccctgtg
cggctcaca 27060

gatcttattc cctttaacta ataaaaaaaa ataataaagc atcacttact
taaatcagt 27120

sequence listing US1 Amended GL 17OCT04.txt

```

tagcaaattt ctgtccagtt tattcagcag cacctccttg ccctcctccc
agctctggta 27180

ttgcagcttc ctcttggtg caaactttct ccacaatcta aatggaatgt
cagtttcctc 27240

ctgttcctgt ccatccgcac ccactatctt catgttggtg cagatgaagc
gcgcaagacc 27300

gtctgaagat accttcaacc ccgtgtatcc atatgacacg gaaaccggtc
ctccaactgt 27360

gccttttctt actcctccct ttgtatcccc caatggggtt caagagagtc
cccctggggt 27420

actctctttg cgcctatccg aacctctagt tacctccaat ggcatgcttg
cgtcaaaaat 27480

gggcaacggc ctctctctgg acgaggccgg caaccttacc tcccaaaatg
taaccactgt 27540

gagcccacct ctcaaaaaaa ccaagtcaaa cataaacctg gaaatatctg
caccctcac 27600

agttacctca gaagccctaa ctgtggctgc cgccgcacct ctaatggctg
cgggcaacac 27660

actcaccatg caatcacagg ccccgctaac cgtgcacgac tccaaactta
gcattgccac 27720

ccaaggaccc ctcacagtgt cagaaggaaa gctagccctg caaacatcag
gccccctcac 27780

caccaccgat agcagtaccc ttactatcac tgcctcacc cctctaacta
ctgccactgg 27840

tagcttgggc attgacttga aagagcccat ttatacaca aatggaaaac
taggactaaa 27900

gtacgggggt cctttgcatg taacagacga cctaaacact ttgaccgtag

```

sequence listing US1 Amended GL 17OCT04.txt

caactggtcc 27960

agggtgtgact attaataata cttccttgca aactaaagtt actggagcct
tgggttttga 28020

ttcacaaggc aatatgcaac ttaatgtagc aggaggacta aggattgatt
ctcaaaacag 28080

acgccttata cttgatgtta gttatccgtt tgatgctcaa aaccaactaa
atctaagact 28140

aggacagggc cctcttttta taaactcagc ccacaacttg gatattaaact
acaacaaagg 28200

cctttacttg tttacagctt caaacaattc caaaaagctt gaggttaacc
taagcactgc 28260

caagggggtg atgtttgacg ctacagccat agccattaat gcaggagatg
ggcttgaatt 28320

tggttcacct aatgcaccaa acacaaatcc cctcaaaaaca aaaattggcc
atggcctaga 28380

atttgattca aacaaggcta tggttcctaa actaggaact ggccttagtt
ttgacagcac 28440

aggtgccatt acagtaggaa acaaaaataa tgataagcta actttgtgga
ccacaccagc 28500

tccatctcct aactgtagac taaatgcaga gaaagatgct aaactcactt
tggctttaac 28560

aaaatgtggc agtcaaatac ttgctacagt ttcagttttg gctgttaaaag
gcagtttggc 28620

tccaatatct ggaacagttc aaagtgtcga tcttattata agatttgacg
aaaatggagt 28680

gctactaaac aattccttcc tggacccaga atattggaac tttagaaatg
gagatcttac 28740

sequence listing US1 Amended GL 17OCT04.txt

tgaaggcaca gcctatacaa acgctgttgg atttatgcct aacctatcag
cttatccaaa 28800

atctcacggt aaaactgccaa aaagtaacat tgtcagtcaa gtttacttaa
acggagacaa 28860

aactaaacct gtaacactaa ccattacact aaacgggtaca caggaaacag
gagacacaac 28920

tccaagtgca tactctatgt ctttttcatg ggactgggtct ggccacaact
acattaatga 28980

aatattttgcc acatcctctt acactttttc atacattgcc caagaataaa
gaatcgtttg 29040

tgttatgttt caacgtgttt atttttcaat tgcagaaaat ttcaagtcatt
ttttcattca 29100

gtagtatagc cccaccacca catagcttat acagatcacc gtaccttaat
caaactcaca 29160

gaaccctagt attcaacctg ccacctcctt cccaacacac agagtacaca
gtccttttctc 29220

cccggctggc cttaaaaagc atcatatcat gggtaacaga catattctta
ggtgttatat 29280

tccacacggt ttcctgtcga gccaaacgct catcagtgat attaataaac
tccccgggca 29340

gctcacttaa gttcatgtcg ctgtccagct gctgagccac aggctgctgt
ccaacttgcg 29400

gttgcttaac gggcgggcgaa ggagaagtcc acgcctacat gggggtagag
tcataatcgt 29460

gcatcaggat agggcggtgg tgctgcagca gcgcgcgaat aaactgctgc
cgccgccgct 29520

ccgtcctgca ggaatacaac atggcagtggt tctcctcagc gatgattcgc
accgcccgcga 29580

sequence listing US1 Amended GL 17OCT04.txt

gcataaggcg ccttgcctc cgggcacagc agcgaccct gatctcactt
aatcagcac 29640

agtaactgca gcacagcacc acaatattgt tcaaaatccc acagtgaag
gcgctgtatc 29700

caaagctcat ggcggggacc acagaacca cgtggccatc ataccacaag
cgaggtaga 29760

ttaagtggcg acccctcata aacacgctgg acataaacat tacctctttt
ggcatgttgt 29820

aattcaccac ctcccgttac catataaacc tctgattaaa catggcgcca
tccaccacca 29880

tcctaaacca gctggccaaa acctgcccgc cggctataca ctgcagggaa
ccgggactgg 29940

aacaatgaca gtggagagcc caggactcgt aaccatggat catcatgctc
gtcatgatat 30000

caatgttggc acaacacagg cacacgtgca tacacttcct caggattaca
agtcctccc 30060

gcgttagaac catatcccag ggaacaacc attcctgaat cagcgtaaat
cccacactgc 30120

agggagacc tcgcacgtaa ctcacgttgt gcattgtcaa agtgttacat
tcgggcagca 30180

gcggatgata ctccagtatg gtagcgcggt tttctgtctc aaaaggaggt
agacgatccc 30240

tactgtacgg agtgcgccga gacaaccgag atcgtgttgg tcgtagtgtc
atgccaaatg 30300

gaacgccgga cgtagtata tttcctgaag caaaaccagg tgcgggcgtg
acaaacagat 30360

ctgcgtctcc ggtctcgccg cttagatcgc tctgtgtagt agttgtagta

sequence listing US1 Amended GL 17OCT04.txt

tatccactct 30420

ctcaaagcat ccaggcgccc cctggcttcg ggttctatgt aaactccttc
atgcgccgct 30480

gccctgataa catccaccac cgcagaataa gccacacca gccaacctac
acattcggtc 30540

tgcgagtcac acacgggagg agcgggaaga gctggaagaa ccatgttttt
ttttttattc 30600

caaaagatta tccaaaacct caaaatgaag atctattaag tgaacgcgct
cccctccggt 30660

ggcgtgggtca aactctacag ccaaagaaca gataatggca tttgtaagat
gttgacacaat 30720

ggcttcctcaa aggcaaacgg ccttcacgtc caagtggacg taaaggctaa
acccttcagg 30780

gtgaatctcc tctataaaca ttccagcacc ttcaaccatg cccaaataat
tctcatctcg 30840

ccaccttctc aatatatctc taagcaaadc ccgaatatta agtccggcca
ttgtaaaaat 30900

ctgctccaga gcgccctcca ccttcagcct caagcagcga atcatgattg
caaaaattca 30960

ggttcctcac agacctgtat aagattcaaa agcgggaacat taacaaaaat
accgcgatcc 31020

cgtagggtccc ttcgcagggc cagctgaaca taatcgtgca ggtctgcacg
gaccagcgcg 31080

gccacttccc cgccaggaac cttgacaaaa gaaccacacac tgattatgac
acgcatactc 31140

ggagctatgc taaccagcgt agccccgatg taagctttgt tgcattggcg
gcgatataaa 31200

sequence listing US1 Amended GL 17OCT04.txt

atgcaagggtg	ctgctcaaaa	aatcaggcaa	agcctcgcgc	aaaaaagaaa
gcacatcgta	31260			
gtcatgctca	tgcagataaa	ggcaggtaag	ctccggaacc	accacagaaa
aagacaccat	31320			
ttttctctca	aacatgtctg	cgggtttctg	cataaacaca	aaataaaata
acaaaaaac	31380			
atttaaacat	tagaagcctg	tcttacaaca	ggaaaaacaa	cccttataag
cataagacgg	31440			
actacggcca	tgccggcgtg	accgtaaaaa	aactgggtcac	cggtattaag
aagcaccacc	31500			
gacagctcct	cggatcatgtc	cggagtcata	atgtaagact	cggtaaacac
atcaggttga	31560			
ttcatcggtc	agtgtctaaaa	agcgaccgaa	atagcccggg	ggaatacata
cccgcaggcg	31620			
tagagacaac	attacagccc	ccataggagg	tataacaaaa	ttaataggag
agaaaaacac	31680			
ataaacacct	gaaaaaccct	cctgcctagg	caaaatagca	ccctcccgt
ccagaacaac	31740			
atacagcgct	tcacagcggc	agcctaacag	tcagccttac	cagtaaaaaa
gaaaacctat	31800			
taaaaaaaca	ccactcgaca	cggcaccagc	tcaatcagtc	acagtgtaaa
aaagggccaa	31860			
gtgcagagcg	agtatatata	ggactaaaaa	atgacgtaac	ggttaaagtc
cacaaaaaac	31920			
acccagaaaa	ccgcacgcga	acctacgccc	agaaacgaaa	gccaaaaaac
ccacaacttc	31980			
ctcaaactgt	cacttccgtt	ttcccacgtt	acgtaacttc	ccattttaag
aaaactacaa	32040			

sequence listing US1 Amended GL 17OCT04.txt

ttcccaacac atacaagtta ctccgcccta aaacctacgt caccgcgcc
gttcccacgc 32100

ccgcgccac gtcacaaact ccaccccctc attatcatat tggcttcaat
ccaaaataag 32160

gtatat
32166

<210> 7
<211> 489
<212> PRT
<213> RAT

<400> 7

Met	Ser	Gly	Glu	Met	Asp	Lys	Pro	Leu	Ile	Ser	Arg	Arg
Leu	Val	Asp										
1				5					10			
15												

Ser	Asp	Gly	Ser	Leu	Ala	Glu	Val	Pro	Lys	Glu	Ala	Pro
Lys	Val	Gly										
			20					25				30

Ile	Leu	Gly	Ser	Gly	Asp	Phe	Ala	Arg	Ser	Leu	Ala	Thr
Arg	Leu	Val										
			35					40				45

Gly	Ser	Gly	Phe	Phe	Val	Val	Val	Gly	Ser	Arg	Asn	Pro
Lys	Arg	Thr										
								55				60

Ala	Gly	Leu	Phe	Pro	Ser	Leu	Ala	Gln	Val	Thr	Phe	Gln
Glu	Glu	Ala										
65						70						75

sequence listing US1 Amended GL 17OCT04.txt
80

Val	Ser	Ser	Pro	Glu	Val	Ile	Phe	Val	Ala	Val	Phe	Arg
Glu	His	Tyr										
				85					90			
95												
Ser	Ser	Leu	Cys	Ser	Leu	Ala	Asp	Gln	Leu	Ala	Gly	Lys
Ile	Leu	Val										
			100					105				
110												
Asp	Val	Ser	Asn	Pro	Thr	Glu	Lys	Glu	Arg	Leu	Gln	His
Arg	Gln	Ser										
		115					120				125	
Asn	Ala	Glu	Tyr	Leu	Ala	Ser	Leu	Phe	Pro	Ala	Cys	Thr
Val	Val	Lys										
	130					135				140		
Ala	Phe	Asn	Val	Ile	Ser	Ala	Trp	Ala	Leu	Gln	Ala	Gly
Pro	Arg	Asp										
145				150					155			
	160											
Gly	Asn	Arg	Gln	Val	Leu	Ile	Cys	Gly	Asp	Gln	Leu	Glu
Ala	Lys	His										
			165					170				
175												
Thr	Val	Ser	Glu	Met	Ala	Arg	Ala	Met	Gly	Phe	Thr	Pro
Leu	Asp	Met										
			180					185				
190												
Gly	Ser	Leu	Ala	Ser	Ala	Arg	Glu	Val	Glu	Ala	Ile	Pro
Leu	Arg	Leu										
		195				200				205		

sequence listing US1 Amended GL 17OCT04.txt

Leu Pro Ser Trp Lys Val Pro Thr Leu Ile Ala Leu Gly
 Leu Ser Thr
 210 215 220

Gln Ser Tyr Ala Tyr Asn Phe Ile Arg Asp Val Leu Gln
 Pro Tyr Thr
 225 230 235
 240

Arg Lys Asp Glu Asn Lys Phe Tyr Lys Met Pro Leu Ser
 Val Val Asn
 245 250
 255

Thr Thr Ile Pro Cys Val Ala Tyr Val Leu Leu Ser Leu
 Val Tyr Leu
 260 265
 270

Pro Gly Val Leu Ala Ala Ala Leu Gln Leu Arg Arg Gly
 Thr Lys Tyr
 275 280 285

Gln Arg Phe Pro Asp Trp Leu Asp His Trp Leu Gln His
 Arg Lys Gln
 290 295 300

Ile Gly Leu Leu Ser Phe Phe Phe Ala Met Leu His Ala
 Leu Tyr Ser
 305 310 315
 320

Phe Cys Leu Pro Leu Arg Arg Ser His Arg Tyr Asp Leu
 Val Asn Leu
 325 330
 335

sequence listing US1 Amended GL 17OCT04.txt
 Ala Val Lys Gln Val Leu Ala Asn Lys Ser Arg Leu Trp
 Val Glu Glu 340 345
 350

Glu Val Trp Arg Met Glu Ile Tyr Leu Ser Leu Gly Val
 Leu Ala Leu 355 360 365

Gly Met Leu Ser Leu Leu Ala Val Thr Ser Ile Pro Ser
 Ile Ala Asn 370 375 380

Ser Leu Asn Trp Lys Glu Phe Ser Phe Val Gln Ser Thr
 Leu Gly Phe 385 390 395
 400

Val Ala Leu Met Leu Ser Thr Met His Thr Leu Thr Tyr
 Gly Trp Thr 405 410
 415

Arg Ala Phe Glu Glu Asn His Tyr Lys Phe Tyr Leu Pro
 Pro Thr Phe 420 425
 430

Thr Leu Thr Leu Leu Leu Pro Cys Val Ile Ile Leu Ala
 Lys Gly Leu 435 440 445

Phe Leu Leu Pro Cys Leu Ser His Arg Leu Thr Lys Ile
 Arg Arg Gly 450 455 460

Trp Glu Arg Asp Gly Ala Val Lys Phe Met Leu Pro Ala
 Page 55

sequence listing US1 Amended GL 17OCT04.txt
Gly His Thr
465 480 470 475
Gln Gly Glu-Lys Thr ser His Val Glx
485